

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)
) **ET Docket No. 18-21**
Spectrum Horizons)

To: The Commission

REPLY TO OPPOSITION TO PETITION FOR PARTIAL RECONSIDERATION

Robert Bosch LLC (Bosch), by counsel and pursuant to Section 1.429(g) of the Commission’s Rules [47 C.F.R. §1.429(g)], hereby respectfully submits its reply to the *CTIA Opposition to Petition for Partial Reconsideration* filed on or about August 15, 2019 by CTIA – The Wireless Association (CTIA).¹ CTIA opposes Bosch’s *Petition for Partial Reconsideration* (the Bosch Petition) filed July 1, 2019 in this proceeding. The Bosch Petition seeks a single addition to, but no other modification of the *First Report and Order*, 34 FCC Rcd. 1605 (2019) (First R&O). CTIA generally makes two arguments with respect to the Bosch Petition: (1) that the Bosch Petition is procedurally defective because the Commission allegedly already addressed the issues raised therein, and the Petition relies on arguments “fully considered and rejected” by the Commission in the same proceeding; and (2) that the Bosch Petition fails on the merits because the Commission already made available a significant amount of spectrum for unlicensed use in this proceeding already. Neither of CTIA’s arguments is meritorious; they simply reiterate the unexplained conclusions in the First R&O; and Bosch continues to urge that the Commission reconsider its refusal to make available the internationally harmonized band 123-140 GHz for unlicensed use in the United States. For its reply to CTIA’s Opposition, Bosch states as follows:

¹ Because the Bosch *Petition for Partial Reconsideration* was placed on Public Notice July 31, 2019 per Report No. 3131, the deadline for filing Oppositions to the Petition was August 15, 2019. See Section 1.429(f) of the Commission’s Rules. Replies to Oppositions are due ten days thereafter, per Section 1.429(g). Therefore, this Reply to the CTIA opposition is filed timely pursuant to Sections 1.429(d) and Section 1.4(j) of the Commission’s Rules.

1. CTIA first urges that the relief requested in Bosch’s Petition has “already been fully considered and rejected by the Commission” in this proceeding.² In support of this argument, CTIA notes that the First R&O found that Bosch, in suggesting a specific band not addressed in the *Notice of Proposed Rule Making* in this proceeding³, had not provided sufficient detail⁴ to allow proper consideration of its proposal. CTIA also noted⁵ that the Commission stated that “at this time” it did not wish to provide additional bands for unlicensed operation and that it had made a considerable amount of spectrum for unlicensed use in multiple bands “that is sufficient to enable development of new unlicensed devices and applications” which could be reassessed at a later date.

2. But it is precisely because the Commission did *not* address the merits of Bosch’s specifically justified argument in the First R&O that the Bosch Petition was filed. The entire premise of this proceeding was to amend, among other regulations, the Part 15 rules applicable to certain of the bands above 95 GHz, in order to accommodate the development of, and to enable new innovative services and technologies. Bosch readily concedes that overall, the actions taken in the First R&O will facilitate the development of some new equipment and applications using unlicensed RF systems in some segments of spectrum between 95 GHz and 3 THz. However, the Commission (1) did *not* make internationally harmonized spectrum available in the bands made available for unlicensed operation, anywhere in the 2,905 gigahertz of spectrum available and under consideration in this proceeding (other than the small segment at 120-123

² CTIA Opposition, at 2.

³ *Notice of Proposed Rule Making and Order*, 33 FCC Rcd. 2438 (2018)

⁴ The specific language of the Commission in the First R&O, at note 70, was that “Bosch, the only commenter suggesting a specific band not addressed in the *Notice*, did not provide sufficient detail for the proper consideration of its proposal. *See* Bosch Comments at 9-10 (suggesting ultrawideband radiodetermination use in the 123-140 GHz band to facilitate international harmonization of product development).” CTIA’s statement that Bosch failed to “provide adequate – in fact, *any* – detail for its proposal regarding the 123-140 GHz band...” can fairly be dismissed as hyperbole.

⁵ *CTIA Opposition* at 3.

GHz); and (2) it did *not* address the specific arguments provided by Bosch in favor of doing so, particularly in the band 123-140 GHz (a total of 17 GHz of additional spectrum), anywhere in the First R&O. This is true despite the Commission's stated commitment to permit enhanced experimental licensing and unlicensed applications within the bands above 95 GHz, and "to identify and make available unused and underused spectrum regardless of the frequency range."⁶

3. CTIA unreasonably discounts the justification provided by Bosch in its comments filed in this proceeding in response to the *Notice of Proposed Rule Making* for the availability of the band 123-140 GHz for unlicensed operation. Bosch's comments, after supporting the Commission's proposal to make available domestically the bands made the bands 116-123 GHz and 244-246 GHz for unlicensed operation (removing them from the large amount of spectrum included theretofore in the Part 15 "restricted bands" pursuant to Section 15.205(a) of the Commission's rules), also urged that the Commission adopt internationally harmonized rules for unlicensed devices generally in these bands (most urgently for radiodetermination purposes, but to permit a wide variety of other applications as well). Bosch argued that the bands made available for unlicensed operation in this proceeding should be, to the greatest extent possible, harmonized with those of CEPT. In order for such bands to be of maximum utility to manufacturers and developers of new applications for these bands, international harmonization of the spectrum in which the devices and applications are intended to operate is critically important, as the economics of development of these new applications demands it. Finally, Bosch urged that the Commission should consider, in this proceeding or separately in the very near future, permitting Ultra-Wideband (UWB) device operation around 122 GHz (and in other bands) as proposed in ETSI System Reference Document TR 103 498 – v.1.1.1, in order to permit compatible spectrum sharing and efficiency.

⁶ First R&O, at ¶ 1.

4. Finally, Bosch's request in its Comments that the Commission also make available the band 123-140 GHz for internationally harmonized, unlicensed operation was *directly responsive* to the Commission's specific request at paragraph 57 of the *Notice of Proposed Rule Making* for comment on whether there are any other bands above 95 GHz that would be suitable for unlicensed use in addition to the 15.2 gigahertz of spectrum identified in the *Notice*. The Commission asked whether it should permit unlicensed use of the 116-122 GHz band in addition to the adjacent 122-123 GHz band so as to provide a contiguous seven gigahertz band of spectrum available for unlicensed use. Bosch supported that proposal and also asked for consideration of the band 123-140 GHz for unlicensed use in order to facilitate international harmonization of product development. Having asked for such comment and having received it, the Commission should have addressed the critically important point made by Bosch that internationally harmonized bands facilitated product development.⁷ There was *ample* justification in the Bosch comments for the relief requested. However, the Commission did not address those points. Instead, it simply argued that it had made available other, non-internationally harmonized spectrum for unlicensed operation, deeming that sufficient for now, without further elaboration. There is no evidence in the record that Bosch has been able to find that would indicate that the Commission considered whether or not the unlicensed spectrum that was made available in the bands 116-123 GHz and 244-246 GHz would result in the desired

⁷ It is well-understood in the spectrum management community that international harmonization of allocations is beneficial in making new technologies widely available and facilitating competition, as well as reducing costs for end-users, by reducing production costs for manufacturers. Among the best practices for national spectrum management listed by the Commission is "Harmonizing, as far as practicable, effective domestic and international spectrum policies, including of radio-frequency use..." See, <https://www.fcc.gov/general/best-practices-national-spectrum-management>. Commissioner O'Rielly noted in an FCC Blog dated January 15, 2016 that "The benefits of global harmonization are many. For instance, it reduces the cost of new equipment and devices because of the economies of scale achieved when technology can be marketed globally. Additionally, it allows consumers to have the same experience with their devices whether they are at home or abroad." See <https://www.fcc.gov/news-events/blog/2016/01/15/2015-world-radiocommunication-conference-troubling-direction>.

experimentation and new technology development, or whether the additional, internationally harmonized band at 123-140 GHz would serve a beneficial purpose.

5. The Commission is not permitted to use mere conclusory statements in addressing arguments fairly raised during notice-and-comment rulemaking. *Center for Biological Diversity v. U.S. Bureau of Land Mgmt.*, 698 F.3d 1101, 1124 (9th Cir. 2012). Nor should it fail to consider an important factor relevant to its action, such as the policy effects of its decision or vital aspects of the problem in the issue before it. *Cin. Bell Tel. Co. v. FCC*, 69 F.3d 752, 761 (6th Cir. 1995). Where, as here, the Commission's purpose in opening this proceeding was to facilitate the development of new technologies⁸ and innovative applications,⁹ and where a manufacturer of those applications urges that the desired goal would be facilitated by the provision of internationally harmonized spectrum, that argument is an important factor relevant to the Commission's action and the achievement of the goals underlying the proceeding. It is a *non-sequitur* for the Commission to suggest that because other, non-internationally harmonized spectrum has been made available for unlicensed operation in this proceeding, therefore it is not necessary to make available the internationally harmonized spectrum that Bosch timely urged. There was no stated basis for the Commission's finding that what was done was "sufficient to enable development of new unlicensed devices and applications,"¹⁰ and no explanation why the Commission concluded as it did in the face of Bosch's argument to the contrary.

6. CTIA's only argument on the merits is exactly what the Commission concluded without explanation: that the Commission already allocated significant amounts of spectrum for unlicensed use, which CTIA thinks is enough. It argues further, however, that the amount of

⁸ It is the policy of the United States to encourage the provision of new technologies and services to the public. 47 U.S.C. § 157 (Communications Act § 7).

⁹ *Notice of Proposed Rule Making and Order*, 33 FCC Rcd. at 2438, ¶ 2.

¹⁰ First R&O at ¶ 20.

spectrum for unlicensed use inequitably serves those, like CTIA, with an interest in licensed bands in the millimeter-wave spectrum. CTIA quotes the Commission’s conclusion in the First R&O to the effect that “added time and experience under the new unlicensed and experimental rules we are adopting will provide us with valuable perspective.”¹¹ Bosch argued in its Petition that added time and experience will not provide that perspective if those who would develop new products, technologies and applications for the millimeter-wave bands do not have the incentive flowing from the economic benefit provided by internationally harmonized spectrum.

7. CTIA argues¹² that Bosch seeks to “nearly double the amount of spectrum made available for unlicensed use” in the First R&O. That claim is substantially misleading. The Commission made available 21.2 gigahertz of spectrum in the First R&O for unlicensed operation. Bosch requests that the Commission add the 123-140 GHz band as well, which is 17 gigahertz of spectrum. The band under consideration in this proceeding, however, as mentioned earlier, constitutes 2,905 gigahertz of spectrum. The additional 17 gigahertz sought by Bosch is obviously not significant when considered in context. Nor does CTIA assert a preclusion effect from Bosch’s Petition other than the claim that the *Notice of Proposed Rule Making* “explored” rules that “would allocate” the 130-134 GHz band for licensed, fixed, point-to-point operations. That proposal was not adopted, however, and CTIA has not noted any unique requirements for the use of that band for licensed operation. It would be reasonable for the Commission to determine at a later date whether licensed operations could be implemented as an overlay in that segment, in addition to incumbent unlicensed operation.¹³ It need not be an either/or situation.

¹¹ *Id.* At ¶ 2.

¹² CTIA Opposition at 5.

¹³ This proceeding makes clear that frequency re-use options are extremely high in this range. The Commission stated categorically at paragraph 30 of the First R&O that compatibility between incumbent, licensed services in this frequency range and the addition of low-power unlicensed devices is assured by various factors: “Our discussion is informed by the characteristics of the frequencies above 95 GHz — in particular, the generally high propagation losses in these bands, the high losses due to atmospheric effects at specific frequencies, as well as the tendency of

8. Finally, CTIA makes the surprising argument that, because the Commission has not chosen to make available in the United States the internationally harmonized bands in the millimeter wave range for *licensed* use at 141-148.5 GHz, 151.5-164 GHz and 167-174.8 GHz, Bosch's argument is somehow undercut. The argument is incongruous because the list of frequencies considered for licensed use is not inconsistent with Bosch's proposal. Bosch has no objection to the Commission's making those listed bands available for licensed use, but none has any relevance at all to the importance of internationally harmonized millimeter-wave operating authority for unlicensed devices and systems at 123-140 GHz.

9. CTIA's objections are, individually and collectively, insubstantial. Bosch would reiterate that there are many innovative unlicensed applications that would be available right now which would operate in the band 123-140 GHz, but for the inclusion of the band 123-138 GHz among the Part 15 restricted bands for intentional radiators. These applications include radiodetermination applications such as foreign object detection; living object (i.e. physical presence) detection; vehicle driver state sensors (which can reveal driver medical conditions or the position of the driver); gesture control and recognition for use inside vehicles; and home automation systems. Such sensors within the millimeter-wave range can also be used for such industrial applications as high-resolution obstacle detection for autonomous systems (such as industrial robots); displacement measurement (for example, fuel injection diameter changes or thickness measurements) and flow measurement, to name just a few examples. Inclusion of the band 123-140 GHz in the bands available for unlicensed operation in the United States would permit a *very* significant expansion of industrial, commercial and personal products and applications using these bands for radiodetermination purposes, due to the international

objects in the transmission path to block signals at these frequencies and prevent them from reaching and thus causing harmful interference to authorized service receivers.”

harmonization that would greatly facilitate the economics of manufacturing such devices. The need for international harmonization in this frequency range is of greater urgency than the Commission has noted heretofore, and with respect to the band 116-140 GHz, the Commission should revisit the issue and make flexible accommodation for internationally harmonized spectrum for unlicensed applications. To do so would facilitate, to a far greater extent than has been done in the First Report and Order, the development of new, innovative applications across a wide range of industries and manufacturing applications.

Therefore, the foregoing considered, Robert Bosch LLC again respectfully requests that the Commission reconsider its decision to not consider the additional authorization of unlicensed operation in the band 123-140 GHz, using the same technical parameters that apply to the 116-123 GHz band adopted in this proceeding.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I, Christopher D. Imlay, do hereby certify that I caused to be sent by e-mail as a courtesy copy, and also mailed, via first class U.S. Mail, postage prepaid, a copy of the foregoing REPLY TO OPPOSITION TO PETITION FOR PARTIAL RECONSIDERATION to the following, this 26th day of August, 2019.

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